Leading Us to Water

The **Austin Water** Environmental Leadership Report - 2010

Austin WATER

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SUPPLY

Water Today, Water Tomorrow

CONSERVATION IS THE KEY TO CENTRAL TEXAS' WATER SECURITY

Water. An essential resource. With the responsibility of providing water to Austin comes the duty to ensure our long-term supply. Austin Water has established conservation as one of its core values, strengthening not only consumer programs but internal efforts to reduce leaks and expand the reclaimed water system.

In May 2007, the Austin City Council adopted measures proposed by the Water Conservation Task Force, and Austin Water has focused on implementing those ever since. We made the largest water-saving measures our priorities, including mandatory watering restrictions, reclaimed water, and strengthened conservation billing.

Mandatory Watering Restrictions: The mandatory watering restrictions implemented in 2007 limit watering to two specific days per week and prohibit watering between 10 a.m. and 7 p.m. After only two years, water savings have far surpassed annual goals set by the task force, and projections indicate that we might have already met the task force's 10-year goals. What's more, the water savings occurred during a major drought encompassing two of the hottest and driest summers on record. In fact, as of summer 2009, the drought by some measures (such as inflow to the Highland Lakes) had become worse than the 1950s drought of record. This led the city to institute Stage 2 water-use restrictions. Austin Water implemented this through a widespread public information program and increased enforcement. Thanks to citizen response, water use quickly fell well beyond the reductions already made through the watering restrictions, cutting use by about 20 percent in the first two weeks. Subsequent rains helped reduce use even further. As a result, October 2009 had the lowest per capita usage in 15 years of record keeping.

Early analysis indicates that after only two years, watering restrictions may have already accomplished the 10-year savings goal.

Conservation Billing Rates: In November 2009, we added a "fifth block" residential billing tier, increasing costs for discretionary water use. Austin Water has one of the most aggressive conservation rate structures in the nation, and over the last 20 years our block rates have saved millions of dollars for customers in lower water-use categories.

Reclaimed Water: Last year we saved more than 2 billion gallons of water through the use of reclaimed water, the highly treated effluent from wastewater treatment plants that is recycled to customers, largely for landscaping. The biggest opportunity identified by the Water Conservation Task Force is bringing reclaimed water to The University of Texas, one of Austin Water's biggest customers. This multifaceted project is well underway with completion scheduled in early 2011. The 51st Street tank and pipeline, central to bringing reclaimed water to UT, are nearing completion. The 51st Street line is already bringing reclaimed water to Austin Energy's Mueller Energy Center, green spaces at the Mueller Redevelopment, and ultimately the 32nd Street redevelopment project, local parks, and the City's Hancock Golf Course. Reclaimed water projects are also underway at Austin-Bergstrom International Airport and Guerrero Park.

Austin enacted Stage 2 watering restrictions in August 2009. Outdoor water use was limited to once per week for all customers, and enforcement of the ordinance generated 428 citations for watering violations.

Residential: Odd	Residential: Even	Commercial/ Multi-Family: Odd	Commercial/ Multi-Family: Even
Automatic Irrigation Systems: Before 10 a.m.			
Hose-end Sprinklers, Soakers: Before 10 a.m. and/or after 7 p.m.			
Saturday	Sunday	Tuesday	Friday

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City and Utility Conservation: In recent years, Austin Water has made leak detection and repair a fundamental part of its conservation efforts. Annual audits track unbilled water that may have been lost to leaks or used in maintenance activities, and the results guide the improvement of our processes and help us prioritize system upgrades and resource allocation. Routine surveys of the water system help detect underground leaks so crews can repair them before they even surface. In 2010, Austin Water is adding 16 new employees, and seven have been redeployed, to reduce response time for visible leaks. We continue to work with other city departments to track water use and look for ways to conserve.

Conservation Incentives: Austin Water helps customers conserve with incentive programs including free irrigation system audits, a free toilet program, and rebates on water-saving equipment such as high-efficiency toilets and washing machines. Demand for rebates has reached an all-time high, leading us to add $3 million to the fiscal year 2010 rebate budget. Likewise, the overwhelming success of our Free Toilet Program led to a renewal of the program for 2010.

Conservation Education: Through marketing efforts, elementary school curricula, and community outreach events, Austin Water plans to help citizens become more aware of opportunities for conservation. In partnership with LCRA, we promote the Water IQ campaign, rooted in the idea that when people understand the source of their water, they're more likely to help conserve it.

Conservation Requirements: In 2008, Austin added plumbing-code requirements, increasing several efficiency standards for new construction. The code changes also established design standards for residential irrigation systems and raised standards for commercial systems to help reduce waste from landscape watering.

As the largest water and wastewater treatment system in Central Texas, Austin Water is a model for other communities in conservation and water protection. In 2009, Austin was the first to respond to the LCRA's call for water reductions due to near-record drought. We also successfully lobbied to uphold a ban on discharge pollutants into the Highland Lakes. From protecting watershed lands and providing clean, safe drinking water to treating wastewater in a sustainable manner, environmental stewardship is a core value of Austin Water.

Customers line up for free toilet rebates on Jan. 10, 2009, at the Fiesta Mart in Central Austin.

Looking Forward: Now that Austin Water has begun implementing the highest-impact strategies to achieve the city's goals, we're turning to those ideas that are expected to result in more gradual but longer-lasting gains. We continue to explore new opportunities by drawing on the successes of other cities and sharing our experience in turn. In 2010, the Water Conservation Division is developing incentives for water-wise landscaping, the beneficial reuse of storm water, and a program to help repair leaks for low-income families.

Water conservation programs reduce climate impact, preserve environmental flows in the Colorado River, and save money for citizens. This is why conservation remains a high priority for Austin Water.

To learn more about conservation programs, see www.WaterwiseAustin.org or call 512-974-2199.

The 2 million-gallon reclamation tower at Mueller should be operational by February 2010. It will serve UT, Austin Energy's Mueller Energy Center, green spaces at the Mueller Redevelopment, as well as local parks and golf courses.

QUALITY

Keeping it Clean Upstream

LESS POLLUTION IN MEANS LESS TO FILTER OUT

Austin Water delivers highly purified drinking water from two treatment plants to its customers through a distribution system containing more than 3,500 miles of water main, 31,348 fire hydrants, 45 pump stations, and 32 water storage reservoirs. Austin's drinking water consistently surpasses federal and state standards for public drinking water. We serve a population of approximately 850,500 through 200,000 service connections. Austin's two water treatment plants—Davis and Ullrich—both draw water from Lake Austin and have a combined maximum capacity of 285 millions gallons per day.

Wildlands: Austin Water's Wildlands Division protects water quality well before it gets to the treatment plants and also provides significant protection for water on its way to Austin's beloved Barton Springs. The Wildlands Division manages some 37,000 acres of public land held in trust for water quality and endangered species protection. Balcones Canyonlands conserves habitat for eight endangered species and 27 species of concern, and the Water Quality Protection Lands program optimizes the quantity and quality of water recharging the Barton Springs segment of the Edwards Aquifer. By absorbing rainfall, the wildlands alleviate flooding and replenish the Edwards Aquifer and the Colorado River.

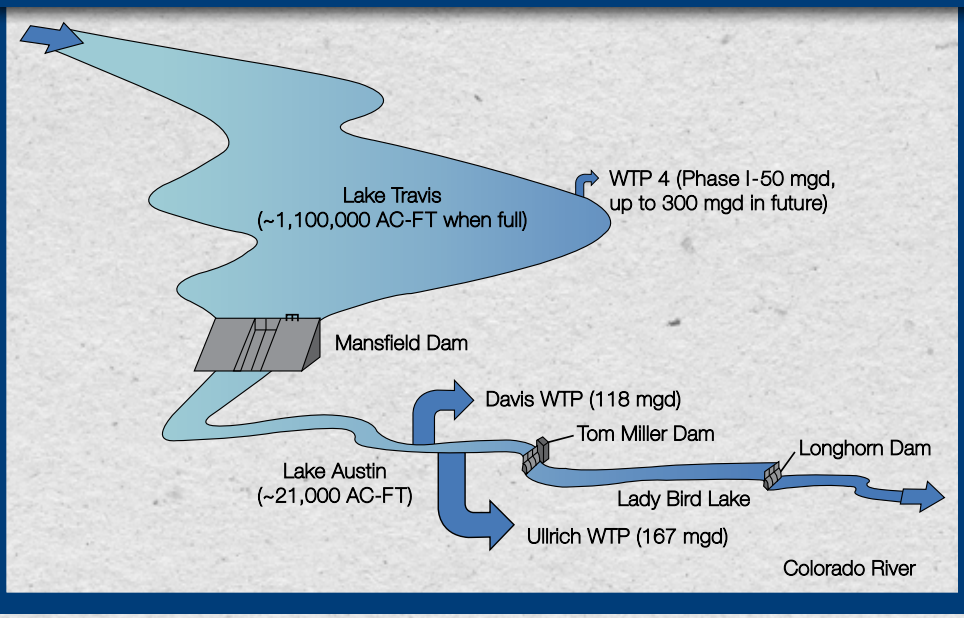
Staff, contractors, and trained volunteers provide public education, habitat restoration, species monitoring, trail maintenance, invasive species removal, and replanting of natives. Research projects with the Wildlands Division allow these lands to act as living laboratories for universities, water districts, and environmental organizations.

Pretreatment: In 2007, the EPA awarded Austin Water 2nd Place in its national Clean Water Act Recognition Award for Pretreatment Program Excellence, recognizing our longtime efforts to ensure commercial and industrial customers remove harmful pollutants before they reach the wastewater stream.

We also have a strong Water Protection Program that helps keep non-potable water out of Austin's drinking water distribution system, which is essential to protecting the quality of drinking water and the health of those who depend on it.

Wastewater Collection: The Austin Clean Water Program began as an order from the EPA but became an opportunity for Austin to improve its wastewater collection system dramatically.

Where It Comes From



Clean, Safe Water

No. 2 in Forbes Magazine's 2008 "Best Cities for Clean Drinking Water"

No. 7 on Environmental Working Group's Top 10 list for best drinking water

Director's Award from the Partnership for Safe Water

National Association of Clean Water Agencies - Silver and Platinum awards for wastewater treatment

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The program was completed ahead of schedule in April 2009 and resulted in:

- 100 wastewater improvement projects in 70 neighborhoods
- More than 1.35 million feet of wastewater lines installed or rehabilitated
- 2,400 new manholes and 3,900 new residential sewer laterals (lines from the house to the main)
- Sewer overflows reduced from 13 million gallons in 2002 to less than 301,800 gallons in 2008
- The removal of 20 miles of sewer lines from local creek beds
- The Clean Water Program was named by the International Right of Way Association as one of the top 10 infrastructure projects of the last 75 years, along with the Golden Gate Bridge, the Hoover Dam, and the Interstate Highway System.

Treatment: Austin Water owns and operates two major wastewater treatment plants, Walnut Creek and South Austin Regional, which together can treat 150 million gallons per day. These plants discharge highly treated effluent to the Colorado River, the quality of which surpasses state and federal permit requirements. In fact, the quality of the river below Austin's discharge has been classified by the TCEQ as "exceptional."

Huge Efficiencies on the Way with Water Treatment Plant 4: When Water Treatment Plant 4 (WTP4) goes online in 2014, greenhouse gas (GHG) emissions from Austin Water drinking water operations will be reduced by approximately 13 percent with further reductions as the plant becomes fully operational. Every gallon of water provided by WTP4 will use one-half the energy required by the Davis Plant. The energy savings will be achieved by larger transmission mains, drawing from a higher water source, treatment plant elevations, and closer proximity to our Northwest Service Area.

WTP4 not only will provide water service with major reductions in energy use and GHG emissions, but will provide service largely to the northern and northwestern sectors of the Desired Development Zone — an area where the city as well as environmental and citizen planning groups have long called for new growth to be steered.

Additionally, the plant buildings are designed to LEED Silver standards, with innovative elements to be incorporated such as sustainable storm water design, water use reduction, use of green power and regional materials, construction waste management, and a variety of indoor environmental quality elements.

WTP4 is designed to grow with Austin and if needed could be expanded to produce up to 300 million gallons per day. However, Austin will only use the amount of water needed to meet current demand. WTP4 will come online in 2014 with the capacity to produce 50 million gallons per day. Water conservation will continue to play a key role in determining future production levels for this plant.

DOWNSTREAM

Reducing Our Footprint

HOW WE'RE CUTTING ENERGY USE AND GREENHOUSE GASES

Water pumping and wastewater treatment are the most energy-intensive services provided by Austin Water, accounting for most of the 200,000 megawatt-hours (MWh) of electricity used by Austin Water annually.

Austin Water is an active participant in the Austin Climate Protection Program's efforts to reduce citywide GHG emissions. In 2007, we became one of the first City of Austin departments to develop an emissions inventory and draft a climate protection plan. Since 90 percent of Austin Water's emissions are from the electricity required to pump and treat water, our climate protection efforts focus on water conservation, energy reduction, and installation of renewable energy infrastructure at our facilities. Over 2007-2008, improved operational efficiencies at Austin Water plants saved an estimated 9500 MWh, nearly 5 percent of the utility's typical annual usage.

Improved efficiencies at plants saved approximately 9500 MWh in 2007-2008, nearly 5 percent of Austin Water's typical annual usage.

Energy Savings through Water Conservation: Saving water also reduces the energy and related GHG emissions across all our processes. Average household water consumption in Austin results in about 20 kg (44 lbs) of GHG emissions per month. Our customers can help reduce emissions by conserving water:

- Reducing indoor water use by 1,000 gallons per month saves 3.3 kg (7.3 lbs) of GHGs
- Reducing outdoor water use by 1,000 gallons saves 1.3 kg (2.9 lbs) of GHGs.

Renewable Energy: In 2010, a 135-kilowatt solar photovoltaic array will be installed on the roof of Austin Water's Glen Bell Service Center. The largest solar array on any Austin rooftop, it is expected to generate 300 MWh of electricity and eliminate 150 metric tons of GHG emissions per year.

Upgrades currently underway at the Hornsby Bend facility will use methane produced during wastewater sludge treatment to fuel onsite generators, creating 1.75 MW of green electricity that will completely offset Hornsby Bend's current power consumption. By 2012, the planned improvements at the site will result in a total carbon footprint reduction of approximately 6,500 tons of GHG emissions and 30,000 gallons of diesel fuel consumption annually.

For the Birds

In October 2009, the Travis Audubon Society celebrated its 50th anniversary of birding at Austin Water's Hornsby Bend Biosolids Management Plant. Hornsby Bend is nationally known as one of the best ecotourism locations in Texas, with more than 370 species of birds identified and an abundance of other wildlife.

Austin Water is reducing Greenhouse Gas Emissions by…

- *Promoting water conservation*
- *Operating and designing treatment plants and pumps with improved efficiency*
- *Generating renewable energy onsite*

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The End of the Line…and New Beginnings

Hornsby Bend Biosolids Management Plant: You might expect that the "end of the line" for a major city's wastewater treatment system would not exactly be the sort of place that draws tourists. But Austin's remarkable Hornsby Bend Biosolids Management Plant is really just the beginning.

All of the sewage sludge from Austin's wastewater treatment plants is sent to Hornsby Bend for final processing. In operation since 1956, the Hornsby Bend Biosolids Management Plant has won more than 40 local, regional, state, and national awards. Hornsby Bend was recently awarded a $31.8 million, zero-interest loan, saving ratepayers about $30.7 million in interest payments. This award represents 80 percent of the total green infrastructure funding issued by the state through its federal stimulus program Clean Water. We'll use the funding to reduce the plant's carbon footprint by optimizing energy consumption, enhancing the production and capture of renewable biogas, and expanding composting operations.

All of the wastewater materials that enter the Hornsby Bend Plant are recycled. Water separated from the biosolids is diverted to ponds that provide renowned birding habitat. The remaining biosolids are used either to fertilize farmland or are combined with yard trimmings, collected by Solid Waste Services, to produce Dillo Dirt™. This is a locally sold soil conditioner that meets the highest standards set by EPA and TCEQ. Creating Dillo Dirt returns vital nutrients back into the soil, protects water quality, and diverts biosolids from landfills.

Center for Environmental Research at Hornsby Bend: The Center for Environmental Research was formed in 1988 as a partnership with The University of Texas and Texas A&M University to support urban ecology and sustainability studies for Austin. The 1,200-acre Hornsby Bend site presents a unique opportunity for studying issues of ecology and urban sustainability. These universities along with federal and state agencies work with the CER to use the Hornsby Bend site for research on biosolids, soil ecology, biodiversity, and more. As a community service, the CER auditorium and classrooms are used by a wide range of academic institutions, government agencies, and nonprofit organizations for workshops, classes, and meetings.

Current CER Research Projects focus on:

- *Biosolids, Compost, and Soil Ecology Research* – In cooperation with the USDA, USGS, TCEQ, and TPWD to study environmental trace contaminants and soil ecology.
- *Hydrogeology of the Alluvial Aquifer* – In cooperation with The University of Texas Jackson School of Geosciences to study the alluvial aquifer of the Colorado River at Hornsby Bend.
- *Riparian Ecology and Restoration Research* – A program to research and restore the three miles of riparian habitat along the Colorado River at the Hornsby Bend site.
- *Avian Ecology* – A database of more than 50,000 bird records from Hornsby Bend dating back to 1959 is constantly updated through the Hornsby Bend Bird Observatory monitoring programs and university researchers.

The CER also supports environmental partnerships and programs at Hornsby Bend:

- *The Texas Riparian Association* – A statewide organization to promote awareness for protection and restoration of Texas riparian areas, hosted by the CER. (www.TexasRiparian.org)
- *The Hornsby Bend Bird Observatory* – A program created to support "citizen science" research and monitoring of Central Texas bird populations through a monthly bird survey, field trips, workshops, and more. (www.HornsbyBend.org)
- *Austin to Bastrop River Corridor Partnership* – A stakeholder partnership of nonprofit organizations, governmental agencies, businesses, and citizens concerned with the future of 90 miles of the Colorado River in Travis and Bastrop County.
- *EcoHouses Partnership* – A partnership with local nonprofit environmental organizations that have used green remodeling to convert houses on the Hornsby Bend site into their offices: TreeFolks (www.TreeFolks.org), and Austin Youth River Watch (www.ayrw.org).

Learn more at www.ci.austin.tx.us/water/cer2.htm.

The Austin Youth River Watch (AYRW) is a nonprofit organization founded in 1992 which works with "at risk" high school students. Austin Water and the Watershed Protection Department jointly fund the Austin Youth River Watch program, and the office is located at the Hornsby Bend Biosolids Management Plant site in one of the "EcoHouses." Students monitor water quality in Austin urban creeks and the Lower Colorado River providing the City of Austin and LCRA with valuable data. Austin Youth River Watch students generally have improved attendance and improved grades.

High-Water Marks

A FEW THOUGHTS ON AUSTIN WATER EMPLOYEES

Your irrigation auditor is the best public employee I've ever met in my entire 73 years of life. He has not only saved the city a lot of water, but also saved me a bunch of money, and his service is so excellent, it just cannot be any better!

—Robert C. Huang

I feel compelled to write and tell you how appreciative I am of two people on your staff. One had to deal with an irate older citizen (me), and he did it with great tact and was very helpful to me. Then today, another came to our home and did an audit and made suggestions regarding our irrigation system. He was extremely professional, knowledgeable, and personable. I felt very well taken care of. The City of Austin is very fortunate to have these two working for us.

—Joan Culver

I am writing this note to thank you for having these men on your staff. They were professional, courteous, helpful, and explained things in a way that was understandable. You should be proud of your staff. Thanks again.

—Joe Schechter

You were both very helpful during the audit. You were very knowledgeable of the new and old controllers we have, and you took time to explain things to us that will help us move forward on improvements to our system—and cut our water usage over time. You did a great job.

—Elizabeth Gray

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